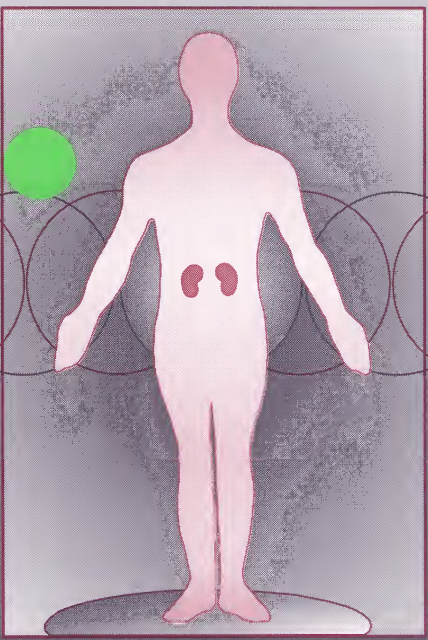
1995 Annual Report

ESRD Core Indicators Project



Department of Health and Human Services
Health Care Financing Administration
Health Standards and Quality Bureau

January 1996

REPORTS
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1995 ESRD CORE INDICATORS PROJECT
initial results

OPPORTUNITIES TO IMPROVE CARE FOR ADULT IN-CENTER HEMODIALYSIS PATIENTS

END STAGE RENAL DISEASE NETWORKS

JANUARY 1996

Note: The clinical data collected for the 1995 Core Indicators Report was from the time period of October, November, and December 1994.

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ACKNOWLEDGMENTS

The Health Care Financing Administration (HCFA) wishes to acknowledge the following groups and persons without whose efforts this report would not have been possible:

- The End Stage Renal Disease (ESRD) Network Organizations throughout the United States:

  The ESRD Amendments of 1978 (P.L. 95-292) authorized the establishment of ESRD Network Organizations. Network Organizations, which are under contract to HCFA, conduct oversight activities for the appropriateness of services and patient safety for ESRD patients. Eighteen Networks exist nationally and are described geographically by the number and concentration of beneficiaries and providers in each area.

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- The following HCFA Region X (Seattle) staff members who played a substantial role in analysis of data and preparation of this report: Shelli K. Beaver, MS; Tina M. Dickerson; Carol L. Ellis; and Joseph K. Lowery, Ph.D

- Staff at more than 1,700 dialysis facilities in the U.S. who abstracted the requested information from medical records on more than 6,900 adult, in-center hemodialysis patients

- The many other individuals in the renal community and HCFA who contributed to this work

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SYNOPSIS

- Purpose of project: The ultimate purpose of the Core Indicators Project is to assist providers of ESRD services to improve care provided to ESRD patients. The immediate purposes were:

  1. To compare the prevalence of important clinical characteristics of adult (aged ≥ 18 years), in-center hemodialysis patients in the U.S. in October-December 1994 to the prevalence of those characteristics in October-December 1993, and

  2. To identify opportunities to improve care for these patients.

- Method used: A random sample of adult, in-center hemodialysis patients who were alive on December 31, 1994 was selected (sample size 7,270 for 18 Networks).

  ESRD facilities, with assistance from ESRD Networks, submitted to HCFA clinical information about these patients for October/November/December, 1994.

  Clinical information included: pre- and post-dialysis blood urea nitrogen levels [to calculate urea reduction ratios (URR)]; hematocrit levels and use of recombinant human erythropoietin (rHuEPO) (to assess anemia); serum albumin levels (to assess nutritional status); pre- and post-dialysis blood pressure measurements (to assess control of hypertension); and the duration of dialysis sessions.

- Initial findings: Data were submitted for 6,919 (95%) of the patients in the sample. Comparisons between October-December 1994 and October-December 1993 were for the 16 ESRD Networks that participated in both years of this project. Highlights from the initial findings include:

  IMPROVEMENT OCCURRED

  * 50% of patients were receiving adequate dialysis (adequate dialysis for this report is defined as URR ≥0.65). There was a 7 percentage point increase in the percent of patients receiving adequate dialysis from late 1993 to late 1994.

  * 44% of blacks and 53% of whites were receiving adequate dialysis in October-December 1994. This was an 8 percentage point increase for black patients and a 7 percentage point increase for white patients from late 1993 to late 1994.

  * 55% of patients had a mean hematocrit >30% in the last quarter of 1994 compared to 46% of the patients in the last quarter of 1993.

  LITTLE OR NO CHANGE

  * 8% of blacks and 5% of whites were severely anemic (severe anemia for this report is defined as hematocrit <25%) in October-December 1994 compared to 10% and 6%, respectively, in October-December 1993.

  * Approximately 1 in 5 patients had serum albumin levels <3.5 gm/dL, an indicator of inadequate nutritional status in October-December 1994 and in October-December 1993.

  * Half of the patients had pre-dialysis systolic blood pressure values >150 mmHg and 15% had pre-dialysis diastolic blood pressure values >90 mmHg in the last quarter of both 1994 and 1993.

- Next steps: Network and HCFA staff will work with ESRD facility staff to develop intervention activities and document further improved care for ESRD patients in 1996/1997.

I. BACKGROUND

The Social Security Amendments of 1972 (P.L. 92-603) extended Medicare coverage to individuals with ESRD who require dialysis or a kidney transplant to maintain life. To qualify for Medicare under the renal provision a person must have ESRD and either: be entitled to a monthly insurance benefit under Title II of the Social Security Act (or an annuity under the Railroad Retirement Act); or be fully or currently insured under Social Security; or be the spouse or dependent child of a person who meets at least one of these last two requirements. There is no minimum age for eligibility under the renal disease provision. The incidence of treated ESRD in the United States is 180 per million population and continues to rise at a rate of 7.8 percent per year. (1) As of December 31, 1994, there were 184,012 patients receiving dialysis therapy in the United States. (2)

There are 18 ESRD Network Organizations throughout the United States that are under contract to HCFA to perform oversight activities to assure the appropriateness of services and protection for ESRD patients. Until recently, the ESRD Networks monitored quality mainly through intensive review of individual case records that had been selected as part of a random sample. HCFA, with input from the renal community, has reshaped the ESRD Network program's approach to quality assurance and improvement in order to respond to the need to improve the care of Medicare ESRD patients (3). This approach has been named the ESRD Health Care Quality Improvement Program (HCQIP). The ESRD HCQIP is based on a reinvention of Medicare's quality assurance programs, especially its ESRD Networks. The change in name not only expresses profound changes that have taken place and will continue but also emphasizes the mission rather than the organizations that carry out the mission.

HCQIP gives the ESRD Networks and HCFA a chance to demonstrate that health care provided to renal Medicare beneficiaries can be measurably improved. HCQIP is based on the principle that the Networks can do more to improve the quality and cost effectiveness of care by bringing typical care into line with best practices than by inspecting to identify erred treatment in individual cases.

The ESRD Networks will conduct activities outlined in the ESRD Network Organizations' contract, the 1994 - 1997 Scope of Work to assist ESRD care givers in assessing their care processes and identifying opportunities for improvement. One activity included in the ESRD HCQIP is the National/Network ESRD Core Indicators Project. This project will establish a consistent clinical database. The elements included in the database will represent clinical measures felt to be indicative of key components of care surrounding dialysis. As such, the data points are considered "indicators" for use in triggering improvement activities.

HCFA and the ESRD Networks are committed to improving ESRD patient care and outcomes by providing tools that can be used by the renal community in assessing patient care processes and identifying opportunities for improvement. One of these tools will include data feedback reports based on the clinical information obtained from the ESRD Core Indicators Project. We invite the renal community to provide us with ideas and feedback as to ways HCFA and the Networks can best help the community improve patient care.

II. PROJECT METHOD

The purpose of the ESRD Core Indicators project is to assist providers of ESRD services to assess and improve the care provided to ESRD patients. Data collected in 1994 established baseline estimates for October-December, 1993 for important clinical measures of care for adult, in-center hemodialysis patients in the U.S. (4) In 1995 data were collected for October-December, 1994 to determine if patterns in these clinical measures had changed and if opportunities to improve care continued to exist.

THE SAMPLE

Annually, each ESRD Network conducts a survey of ESRD facilities to establish the census of ESRD patients in the Network at the end of the calendar year. In April, 1995 a listing of adult (aged ≥ 18 years), in-center hemodialysis patients alive in December, 1994 was obtained from each of the 18 ESRD Networks. The listing included the following information about each of 154,119 patients meeting the project criteria: last name, first name, middle initial, date of birth, Social Security and/or health insurance claim number, underlying etiology of ESRD, the date that dialysis was initiated, and the provider number of the facility where the patient was dialyzing.

We selected a random sample of these patients from each participating Network. The sample size was determined by our desire to be 95% confident that Network-specific estimates for selected clinical measures be accurate within +/- 5%. We oversampled by 20% to compensate for an anticipated non-response rate. The final sample consisted of 7,270 patients. (TABLE 1)

DATA COLLECTION

A one page data collection form was used (FIGURE 1); the use of this form was authorized through the National Institutes of Health (NIH) clinical exemption process. From the listing of patients provided by each Network it was possible to print onto a gummed label several pieces of information before the data collection forms were sent to individual ESRD facilities to be completed. If demographic (e.g., name, date of birth, or race) or clinical (e.g., diagnosis, of ESRD or date that initial dialysis occurred) information was incorrect, facility staff were asked to correct the information. Staff at ESRD facilities were also asked to abstract data for the clinical measures described below.

In August, 1995, the data collection forms for patients in the sample were distributed to 2,017 ESRD facilities, an average of 3.8 forms per facility. Completed forms were returned to the appropriate Network where data were manually entered into a dBASE file. (5) By September 14, 1995, each Network had sent a copy of the resulting dBASE file to the HCFA Regional Office in Seattle where the data were aggregated for the initial analysis.

THE CLINICAL MEASURES

Clinical information in the medical records for each patient in the sample was abstracted for each month the patient was receiving in-center hemodialysis during the months of October, November and December, 1994. The following clinical information was abstracted:

1. The first monthly hematocrit recorded in each project month;

2. Whether or not the patient was receiving recombinant human erythropoietin (rHuEPO) during the week the blood sample was drawn for each hematocrit determination and the weekly rHuEPO dose at that time;

3. The first monthly pre- and post-dialysis blood urea nitrogen (BUN) level recorded in each project month and the patient's weight when these BUNs were drawn;

4. The actual delivered time on dialysis and the ultrafiltration rate of the dialyzer (KUf) at the sessions in which the patient's blood was drawn for the BUN determinations;

5. The first monthly serum albumin level recorded in each project month and the method by which the serum albumin level was determined [by the bromcresol green (BCG) method, or bromcresol purple (BCP) method]; and

6. The first mid-week pre- and post-dialysis sitting systolic and diastolic blood pressures recorded in each project month.

CORE INDICATORS

Using this clinical information, we were able to describe the prevalence of several conditions of care which we call core indicators. The core indicators used in this project were identified by a work group (see page ii) composed of representatives from the renal community and HCFA. The core indicators identified were:

Adequacy of Dialysis: Pre- and post-dialysis BUN levels (to calculate URR) were chosen as indicators for assessing the adequacy of dialysis for adult, in-center hemodialysis patients. Based on the Renal Physicians Association clinical practice guideline and an NIH Consensus Conference statement, the mean urea reduction ratio (URR) of 0.65 or more was defined as adequate dialysis. (1,6) The URR measurement of 0.65 is approximately equivalent to the Kt/V measurement of 1.2. (6, p.11) [URR = (pre-dialysis BUN minus post-dialysis BUN)/pre-dialysis BUN]. Findings from this project allow us to describe the mean URR values for patients in each Network area as well as the percent of patients receiving adequate dialysis (URR ≥0.65).

Hematocrit: Hematocrit level was chosen as an indicator for assessing the treatment of anemia for adult, in-center hemodialysis patients. Findings from this project allow us to describe the mean hematocrit values for patients in each Network area as well as the percent of patients with hematocrit values <25% (severe anemia). Each monthly recorded hematocrit was used in determining the percent of patients receiving rHuEPO, and the average weekly rHuEPO dose stratified by hematocrit levels.

Nutritional Status: Serum albumin level was chosen as an indicator for assessing the nutritional status and mortality risk for adult in-center hemodialysis patients. Serum albumin values were described separately for those patients whose blood was tested by the BCG method and by the BCP method. These two commonly used methods for determining serum albumin concentrations have been reported to yield systematically different results; the BCG method yielding higher serum albumin concentrations than the BCP method. (7) Mean serum albumin values less than 3.5 gm/dL by the BCG method were defined as an indicator of inadequate nutritional status. Since the percent of mean serum albumin values <3.2 gm/dL by the BCP method was essentially the same as the percent of mean serum albumin values <3.5 gm/dL by the BCG method, we also defined a BCP result <3.2 gm/dL as an indicator of inadequate nutritional status. Findings from this project allow us to describe the mean serum albumin value for patients in each Network area.

Blood Pressure Control: Pre- and post-dialysis blood pressure values were chosen as indicators for assessing blood pressure control for adult, in-center hemodialysis patients. Mean systolic blood pressure >150 mm Hg or mean diastolic blood pressure >90 mm Hg was defined as inadequately controlled hypertension. Findings from this project allow us to describe the mean pre-dialysis systolic and diastolic blood pressure for patients in each Network.

INITIAL ANALYSIS

Initial analysis focused on five clinical measures: paired pre- and post-dialysis BUN values that were used to calculate mean URR; hematocrit values; serum albumin values; paired pre- and post-dialysis systolic blood pressure values; and paired pre- and post-dialysis diastolic blood pressure values. Inclusion of a case in the analysis required that data for at least one of the months in the three month project period, with at least three of these five clinical measures be available. We were able to include 6,919 of the 7,270 patients from the original sample (response rate=95%) (TABLE 1). Characteristics regarding the gender, race, age, and diagnosis of ESRD for these patients are shown on Table 2. As expected, the characteristics of this random sample were very similar to the characteristics of the overall U.S. hemodialysis population. Data regarding rHuEPO use and actual time on dialysis were also analyzed. The initial analysis was done using EPI INFO and EPI MAP software. (8,9)

For this report each patient's mean monthly value for the three month project period was determined for the following items for each patient: URR; time on dialysis; hematocrit; serum albumin; and pre-dialysis systolic and diastolic blood pressures. Because we had data from a stratified random sample of patients (i.e., a separate random sample from each of the 18 Network areas), it was necessary to weight the collected data in order to obtain unbiased estimates of mean clinical values for the total population. This weighting was done according to the proportion of each network's total population sampled. Aggregate national results shown in this report were derived from weighted data; Network-specific comparisons were derived from unweighted data.

In the following sections of this report we describe the percent of patients who had selected clinical characteristics (e.g., mean URR ≥ 0.65 or mean pre-dialysis systolic blood pressure >150 mm Hg) during the last three months of 1994. The national results are presented separately in tables by gender, race, age groups (18-44, 45-64, and 65+ years of age), and diagnosis of ESRD. The diagnoses are categorized as diabetes mellitus, hypertension, glomerulonephritis (GN), and other. (10) In some instances clinical characteristics for patients in each Network area are also shown. Selected results are highlighted in figures.

In addition, key findings from the 1994 Core Indicators study (describing patterns of clinical measures from October-December, 1993) are compared to key findings from this year's Core Indicators study (describing patterns of clinical measures from October-December, 1994). These comparisons are for the 16 ESRD Networks that participated in both years of this project.

TABLE 1: Number of adult (aged ≥18 years), in-center hemodialysis patients in each Network in December, 1994, sample size and response rate for the 1995 ESRD Core Indicators Project

NETWORK	# Patients in Dec. '94	Sample Size	# Completed* Forms	Response Rate
1	5,986	398	371	93.2%
2	12,076	411	378	92.0%
3	7,163	402	362	90.1%
4	8,101	405	383	94.6%
5	9,577	408	390	95.6%
6	13,642	412	404	98.1%
7	9,461	407	401	98.5%
8	9,154	407	403	99.0%
9	9,776	408	385	94.4%
10	7,150	402	348	86.6%
11	9,203	407	398	97.8%
12	5,324	396	380	96.0%
13	6,584	401	385	96.0%
14	12,189	411	389	94.6%
15	5,947	398	391	98.2%
16	3,705	382	356	93.2%
17	7,560	404	397	98.3%
18	11,719	411	398	96.8%
TOTAL	154,119	7,270	6,919	95.2%

*A form was considered complete if data were provided for at least one of the months in the fourth quarter of 1994, with at least 3 of the following 5 items: 1) hematocrit value, 2) paired pre- and post-dialysis BUN values, 3) serum albumin value, 4) paired pre- and post-dialysis systolic blood pressure values, and 5) paired pre- and post-dialysis diastolic blood pressure values.

Two or more monthly values for these clinical measures were available for 95% of patients for hematocrit, for 93% for serum albumin by either BCG or BCP method, for 93% and for 92% for paired pre- and post-dialysis systolic and diastolic blood pressures, respectively. At least one monthly paired pre- and post-dialysis BUN value was available for 87% of patients, and two or more were available for 62%.

TABLE 2: Characteristics of adult (aged ≥ 18 years), in-center hemodialysis patients in the 1995 Core Indicators Project compared to those of all in-center hemodialysis patients in the U.S. in 1992

	1995 Core Indicators Sample		All U.S. in 1992[*]	
CHARACTERISTIC	#	%	# in 1000s	%
TOTAL	6919	100	121.9	100
GENDER				
Men	3547	51	63.0	52
Women	3370	49	58.9	48
RACE				
White	3794	55	68.3	56
Black	2576	37	47.6	39
Asian	218	3	3.0	3
American Indian/Alaska Native	118	2	1.7	1
Other/Unknown	204	3	1.3	1
AGE GROUP (years)				
18-44	1307	19	23.2[**]	19
45-64	2480	36	44.3	36
65+	3130	45	53.8	44
DIAGNOSIS				
Diabetes mellitus	2378	34	37.8	31
Hypertension	2137	31	36.9	30
Glomerulonephritis	1089	16	16.6	14
Other	1062	15	17.7	15
Unknown	253	4	13.0	11

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[*] USRDS: 1995 Annual Data Report, Bethesda, MD, National Institutes of Health, 1995.

[**] for ages 20-44 years

*note: percents may not add up to 100% due to rounding

IN-CENTER HEMODIALYSIS CORE INDICATORS DATA COLLECTION FORM: 1995

BEFORE COMPLETING FORM, READ INSTRUCTIONS ON BACK OF FORM

PATIENT IDENTIFICATION PLACE LABEL HERE	MAKE CORRECTIONS TO PATIENT INFORMATION ON LEFT IN THE SPACE BELOW

11. IS THE ABOVE PATIENT INFORMATION CORRECT? ___ *YES; Go to question 12.*

___ *NO; Make corrections above, then go to question 12.* ___ *UNKNOWN; STOP. Note the provider if known & return form to Network.*

LAB DATA. THE FOLLOWING DATA ARE REQUESTED FOR OCT, NOV and DEC, 1994. FOR EACH QUESTION, USE THE FIRST LAB VALUES OF THE MONTH. DO NOT LEAVE ANY QUESTIONS BLANK. ENTER THE FOLLOWING CODES IN THE SPACES BELOW IF LAB VALUES CANNOT BE LOCATED: NF IF NOT FOUND, HOSP IF PATIENT HOSPITALIZED DURING THE TIME PERIOD, TRANS IF PATIENT ABSENT DURING THE TIME PERIOD, NP IF TESTS NOT PERFORMED DURING THE TIME PERIOD.

	OCT 1994	NOV 1994	DEC 1994
12. HEMATOCRIT: Enter the FIRST monthly hematocrit determined by lab's Coulter Counter or other hematology instrument FOR EACH MONTH: OCT, NOV, DEC 1994. DO NOT ENTER SPUN HCT VALUE unless your facility does not obtain laboratory hcts.			
First monthly hematocrit:	___ . ___ %	___ . ___ %	___ . ___ %
Was a prescription for EPO in effect (even if patient did not receive dose) during the week the monthly hct above was drawn?	___ Yes ___ No	___ Yes ___ No	___ Yes ___ No
If yes, what was the PRESCRIBED weekly EPO dose at the time immediately before the above HCT was drawn?	___ Units/wk	___ Units/wk	___ Units/wk
13. BUN: monthly pre and post dialysis BUN FOR EACH MONTH: OCT, NOV, DEC 1994. The pre- and post-dialysis BUNs must be drawn on the same day of the month. If only performed quarterly, enter th Enter the FIRST e values for month performed and enter "NP" for the other two months. Also, enter the patient's actual DELIVERED time on dialysis when the BUNs were drawn and the ultrafiltration coefficient (KUf) for the dialyzer used at the time the BUNs were drawn. (See attached chart for the ultrafiltration coefficients.)			
First monthly Pre dialysis BUN:	___ ___ mg/dl	___ ___ mg/dl	___ ___ mg/dl
First monthly Post dialysis BUN:	___ ___ mg/dl	___ ___ mg/dl	___ ___ mg/dl
Patient weight when BUNs above drawn:	___ ___ ___ lbs ___ ___ ___ kgs	___ ___ ___ lbs ___ ___ ___ kgs	___ ___ ___ lbs ___ ___ ___ kgs
Actual DELIVERED time on dialysis at session when BUNs drawn:	hrs ___ ___ min	hrs ___ ___ min	hrs ___ ___ min
KUf at session when BUNs drawn (enter whole number):	___ ___ ml/hr/mmHg	___ ___ ml/hr/mmHg	___ ___ ml/hr/mmHg
14. SERUM ALBUMIN: Enter the FIRST monthly serum albumin FOR EACH MONTH: OCT, NOV, DEC 1994. Check the method used by lab to determine the serum albumins. If method unknown, call lab to find out. Do not leave blank.			
First monthly serum albumin:	___ . ___ gm/dl	___ . ___ gm/dl	___ . ___ gm/dl
Check lab method used (BCG=bromcresol green; BCP=bromcresol purple):	___ BCGreen ___ BCPurple	___ BCGreen ___ BCPurple	___ BCGreen ___ BCPurple
15. SITTING BLOOD PRESSURE:mid-week sitting pre and post Enter the FIRST dialysis BPs (systolic/diastolic) FOR EACH MONTH: OCT, NOV, DEC 1994. If the SBP or the DBP was unobtainable, enter UNOB in appropriate space.			
First mid-week pre-dialysis BP: (SBP/DBP)	___ ___ ___ / ___ ___ ___	___ ___ ___ / ___ ___ ___	___ ___ ___ / ___ ___ ___
First mid-week post-dialysis BP: (SBP/DBP)	___ ___ ___ / ___ ___ ___	___ ___ ___ / ___ ___ ___	___ ___ ___ / ___ ___ ___

16. *Name, title and phone number of individual completing form:*

HCFA-820 (06/95) *HCFA/HSQB & NIH/NIDDK (NIH-CE950202A)*

INSTRUCTIONS FOR COMPLETING THE IN-CENTER HEMODIALYSIS CORE INDICATORS DATA COLLECTION FORM - 1995

If the information is incorrect, make corrections to the right of the label.The label on the top left side of the form (#'s 1-8) contains the following patient identifying information.

1. **LAST and first name.**
2. **DATE of birth (DOB) as DD/MM/YY.**
3. **SOCIAL Security Number (SSN).**
4. **HEALTH Insurance Claim Number (HIC).**
5. **SEX (1=Male; 2=Female; 3=Unknown).**
6. **RACE (1=American Indian/Alaskan Native; 2=Asian/Pacific Islander; 3=Black; 4=White; 5=Unknown).**
7. **PRIMARY cause of renal failure by ICD-9 code.**
8. **DATE, as DD/MM/YY, that the patient began a regular course of dialysis.**
9. **ESRD Network number: Do not make corrections to this item.**
10. **Facility's Medicare provider number.**
11. **Review the patient and facility specific information contained on the pre-printed label and mark either Yes, No or Unknown. If No is marked, write corrections to the pre-printed information in the space to the right of the label. If Unknown is marked, send the form back to the ESRD Network office with the name and address of the facility providing services to this patient on December 31, 1994, if known.**

TO ANSWER QUESTIONS 12 - 15, REVIEW THE PATIENT'S MEDICAL RECORD FOR THE MONTHS OF OCTOBER THROUGH DECEMBER 1994. DO NOT LEAVE ANY ITEMS BLANK. ENTER THE FOLLOWING CODES IF THE INFORMATION CANNOT BE LOCATED: "NF" FOR NOT FOUND, "HOSP" IF PATIENT HOSPITALIZED DURING THE TIME PERIOD, "TRANS" IF PATIENT ABSENT DURING THE TIME PERIOD, "NP" IF TEST NOT PERFORMED DURING THE TIME PERIOD.

12. **Enter the patient's FIRST MONTHLY hematocrit (HCT) value determined by the laboratory's Coulter Counter or other hematology instrument for EACH month - October, November and December 1994. DO NOT record any spun HCT value performed by the dialysis facility UNLESS YOUR FACILITY DOES NOT OBTAIN LABORATORY HEMATOCRIT LEVELS.**

    Check the appropriate box to indicate if there was a prescription for EPO in effect during the week the monthly HCT was drawn, even if the patient did not receive the EPO dose.

    If the answer above is yes, please enter the PRESCRIBED weekly EPO dose at the time immediately before the monthly HCT was drawn.

13. **Enter the patient's FIRST pre and post dialysis BUN values recorded EACH month for October, November and December 1994. The BUN values must be drawn on the same day. If pre and post dialysis BUNs are only performed quarterly, enter the values for the month when performed and record "not performed" for the other two months.**

    Enter the patient's weight at the session when the pre and post dialysis BUN levels were drawn; check either lbs or kgs as appropriate.

    Enter the patient's ACTUAL DELIVERED time on dialysis during the session when the BUN levels were drawn. DO NOT ENTER THE PRESCRIBED TIME ON DIALYSIS.

    Enter the ultrafiltration coefficient (KUf) published for the dialyzer by make and model used on the day the blood samples were drawn for the pre and post dialysis BUNs in October, November and December 1994. This number should be reported as a whole number (between 01 and 99). Round the number down to the nearest whole number if less than 0.5 and round the number up to the nearest whole number if 0.5 or greater. Please refer to the Ultrafiltration Coefficient Chart for the number to enter for this question. If the dialyzer you used is not included on this chart, please refer to the dialyzer manufacturer's insert for the ultrafiltration coefficient value.

14. **Enter the patient's FIRST serum albumin value recorded EACH month for October, November and December 1994.**

    Check the appropriate method used by the laboratory to determine the serum albumin levels (bromcresol green or bromcresol purple). If you do not know what method the laboratory used, call the laboratory to find out this information; DO NOT LEAVE THIS QUESTION BLANK.

15. **Enter the patient's SITTING initial pre dialysis and post dialysis systolic and diastolic blood pressures recorded for the FIRST mid-week treatment for EACH month of October, November and December 1994. If the SBP or the DBP was unobtainable (as opposed to not recorded or not found in the patient's chart), enter UNOB in the appropriate space.**

16. **Enter the name, title and phone number of the person who completed the form .**

    Forward the completed form to ESRD Network No.______ at the address below:

III. IMPROVEMENTS AND OPPORTUNITIES TO IMPROVE CARE

By describing the prevalence of important clinical characteristics of adult, in-center hemodialysis patients in the U.S. in October-December 1993 and again in October-December 1994, this project has documented important improvements in and continuing opportunities to improve care for these patients.

Striking improvement in the adequacy of dialysis for in-center hemodialysis patients occurred. However, important opportunities to improve this care further remain.

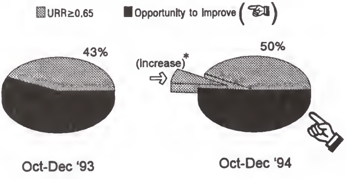
> **In the last quarter of 1994, 49% of adult, in-center hemodialysis patients in the 18 Networks in the U.S. received dialysis which resulted in a URR ≥0.65*. In the 16 Networks that provided data for the last quarter of both 1993 and 1994, the percent of patients receiving dialysis at this URR level increased significantly from 43% to 50%. (FIGURE 2) This represents a significant improvement in care, with approximately 10,500 more hemodialysis patients in the U.S. receiving dialysis with URR ≥0.65 in late 1994 than would have been receiving dialysis at this level in late 1993. (FIGURE 3) At the same time, half of the patients were receiving dialysis with URR <0.65.**

One other important improvement occurred. In late 1993 46% of adult in-center hemodialysis patients in the 16 participating Networks had a mean hematocrit >30%. By late 1994 the percent of patients with mean hematocrits at this level had increased significantly to 55%. (FIGURE 4) It should be noted that one goal of the National CooperativeAnemia Project is to increase the percent of patients with hematocrit >30%.(11)

While important improvement occurred in the proportion of patients with mean hematocrit >30% little improvement occurred in the proportion of patients with severe anemia (hematocrit <25%). Raising hematocrits from severe anemia levels may be more difficult to achieve than improving relatively higher hematocrits.

Other clinical indicators reflecting nutritional status and blood pressure control did not show improvement between the two time periods and opportunities to improve care for this group of hemodialysis patients persist.

Figure 2: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean URR≥0.65, October-December 1993 compared to October-December 1994, ESRD Core Indicators Project



*Increase = 7 percentage points; rate ratio: 1.3 (95%CI 1.2, 1.4)

*A URR value≥0.65 is the threshold for adequate dialysis recommended by the Renal Physicians Association and a NIH Consensus Development Conference Panel.(1,6) The National Kidney Foundation and the American Association of Kidney Patients also support this recommendation.

Figure 3: Distribution of Urea Reduction Ratio (URR) values for adult (aged ≥18 years), in-center hemodialysis patients, October-December 1993 compared to October-December 1994, ESRD Core Indicators Project

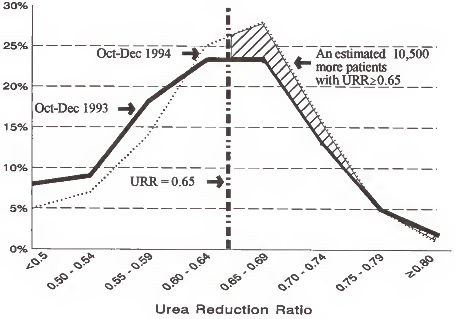
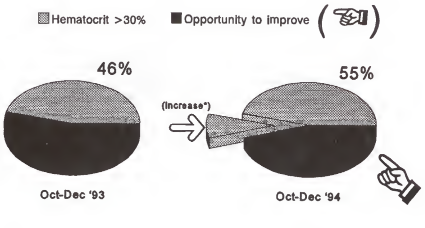


Figure 4: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean hematocrit >30%, October-December 1993 compared to October-December 1994, ESRD Core Indicators Project



*Increase = 9 percentage points; rate ratio: 1.4 (95% CI 1.3,1.6)

The purpose of this report is to provide you with an initial look at the Network and national pictures of the clinical measures that were collected for the ESRD Core Indicators Project. The project did not attempt to develop facility-specific profiles of care. As you review this information, ask yourself: What percentage of adult hemodialysis patients at your facility are receiving adequate dialysis (URR ≥ 0.65)? What percentage of your patients have an hematocrit >30%? How do these indicators of care for your patients compare to the indicators described in this report? We want this report to stimulate you to answer questions such as these and, where indicated, to develop ways to improve care to your patients.

IV. NEXT STEPS

Your ESRD Network will disseminate the initial results of the 1995 ESRD Core Indicators Project to all dialysis facilities for the purpose of stimulating facility efforts to improve care. Your Network staff and Medical Review Board will be available to assist you in identifying and developing improvement efforts.

As mentioned previously, while significant improvements have occurred, the opportunity to improve care for adult, in-center hemodialysis patients in the U.S. in the area of adequacy of dialysis continues to be striking. Every ESRD facility should be familiar with the "Clinical practice guideline on adequacy of hemodialysis" developed by the Renal Physicians Association. (6) Factors that contribute to the inadequate delivery of dialysis are discussed in this document. Efforts to improve the adequacy of dialysis should be attentive to these factors.

In subsequent months, your ESRD Network will distribute to you additional data feedback reports. Please take the time to review these reports as you receive them and provide us with feedback as to the usefulness of the reports and ways you would like to see the clinical data displayed.

In the future, the ESRD Networks in collaboration with ESRD facilities will continue to assess the prevalence of the ESRD Core Indicators in adult, in-center hemodialysis patients in the U.S. The purpose of this effort will be to assess improvement in care to these patients and encourage further improvements. The ultimate goal for this project is to improve care for these patients.

Your ESRD Network staff and Medical Review Board are available to assist you in the following:

☞ **Understanding and interpreting the data feedback reports that are generated from these clinical data**

☞ **Learning how to collect facility specific data so that you may compare the aggregate clinical characteristics for your patients to those of patients in your network and elsewhere in the U.S.**

☞ **Defining your care processes to identify areas for improvement. Your network will be able to provide you suggested treatment algorithms for adequacy of dialysis, anemia, nutritional status, and blood pressure control**

☞ **Comparing your care processes to practice guidelines, such as the Renal Physicians Association's "Clinical practice guideline on adequacy of hemodialysis" and the ESRD anemia workgroup's "Treatment of anemia in ESRD patients algorithm."**

V. ADEQUACY OF DIALYSIS

This section and sections VI, VII, and VIII will consist of two parts: 1. Core Indicators results from 18 ESRD Network areas for October-December 1994; and 2. A comparison of Core Indicators results for October-December 1994 and October-December 1993 from the 16 ESRD Network areas for which data are available for both time periods.

1. October-December 1994, all 18 Network areas

The mean URR for adult, in-center hemodialysis patients in the U.S. in the last quarter of 1994 was 0.64. The distribution of URR values for these patients is shown in Figure 5. The mean URR values for gender, race, age, and diagnosis are shown on Table 3.

The Renal Physicians Association and an NIH Consensus Development Conference Panel have recommended that adequate hemodialysis should result in a Kt/V ≥ 1.2, approximately equivalent to URR ≥ 0.65. (1,6) The percent of patients who received adequate hemodialysis in the last quarter of 1994 was 49% (TABLE 3). The percent of patients receiving adequate hemodialysis was higher for women than for men, higher for whites than for blacks, and higher for patients ≥ 65 years of age than for those 18-44 and 45-64 years of age. (FIGURES 6,7). The percent of ESRD patients with a diagnosis of Diabetes, Hypertension, Glomerulonephritis, Other, and Unknown who received adequate hemodialysis is shown in Figure 8.

The percent of patients who received adequate hemodialysis varied substantially from one geographic region to another. Table 4 shows the percent of patients who received adequate hemodialysis by race and gender in each Network area; the percent ranged from 33% to 62% (FIGURES 9,10).

The mean time spent on dialysis per dialysis session was 200 minutes. The mean time spent on dialysis was somewhat longer for men than women (206 minutes vs 193 minutes), and blacks than whites (203 minutes vs 198 minutes)(TABLE 5). The mean time spent on dialysis did not differ substantially for patients with URR values <0.60 compared to patients with URR values from 0.60 to 0.64, or those with URR values ≥ 0.65 (TABLE 5). The distribution of the mean time on dialysis for these patients is shown in Figure 11.

Figure 5: Distribution of mean URR values for adult(aged ≥ 18 years), in-center Hemodialysis patients, October-December 1994, ESRD Core Indicators Project

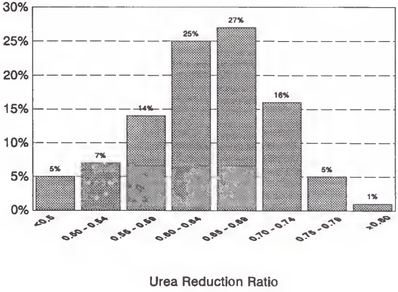
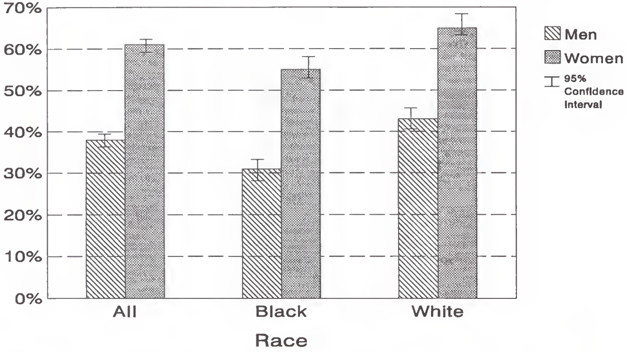


TABLE 3: Adequacy of dialysis for adult (aged ≥ 18 years), in-center hemodialysis patients in the U.S., October-December 1994, by patient characteristics, ESRD Core Indicators Project

	Measure of Adequacy		
PATIENT CHARACTERISTIC	MEAN URR	% OF PATIENTS WITH URR ≥0.6	% OF PATIENTS WITH URR ≥0.65
TOTAL	0.64	74	49
GENDER			
Men	0.62	66	38
Women	0.66	82	61
RACE			
AI/AN	0.66	84	57
Asian	0.66	79	60
Black	0.63	69	43
White	0.64	77	53
Other/Unknown	0.65	76	51
AGE GROUP (years)			
18-44	0.63	69	45
45-64	0.63	69	45
65+	0.64	79	54
DIAGNOSIS			
Diabetes mellitus	0.63	71	46
Hypertension	0.64	73	48
Glomerulonephritis	0.64	75	50
Other	0.65	79	54
Unknown	0.65	75	53

Figure 6: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean URR ≥0.65, October-December 1994, by race and gender, ESRD Core Indicators Project



Note regarding statistics
Readers may be interested to know if some of the patterns of clinical characteristics in this report show statistically significant differences, e.g., comparisons among age groups, racial groups, or geographic areas. To assist readers we have included 95% confidence interval brackets (I) on selected bar charts. If the upper limit of one group's bracket does not overlap with the lower limit of another group's bracket, then the difference between the two groups is statistically significant. In Figure 6, for example, the percent of white men receiving adequate dialysis is statistically significantly higher than the percent of black men receiving adequate dialysis. In contrast, in Figure 8, the difference between the percent of patients who received adequate dialysis, with a diagnosis of diabetes vs glomerulonephritis is not statistically significant.

Note regarding race
In this report several tables describe important clinical characteristics of adult in-center hemodialysis patients for the following race groups: American Indian/Alaska Native (AI/AN), Asian, black, white, and other/unknown. In the figures where these clinical characteristics are compared by race group, however, the comparisons are limited to white vs black. The reason for this is sample size. Because of small sample size (Table 2) the 95% confidence intervals (see note regarding statistics) for estimates for Asian, AI/AN, or other/unknown race groups are very broad. On the other hand, the sample size for white and black patients was large enough to provide very stable estimates, i.e., the 95% confidence intervals are narrow.

Figure 7: Percent of adult (aged ≥18 years), in-center hemodialysis patients receiving dialysis with a mean URR ≥0.65, October-December 1994, by age group, ESRD Core Indicators Project

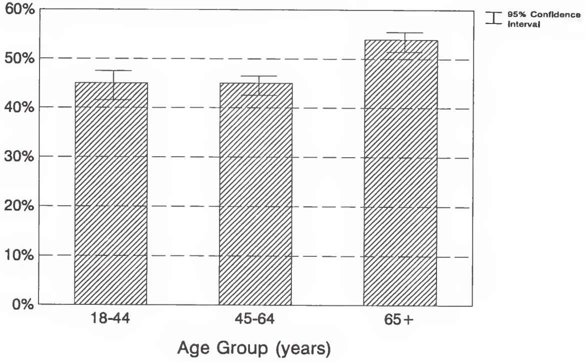
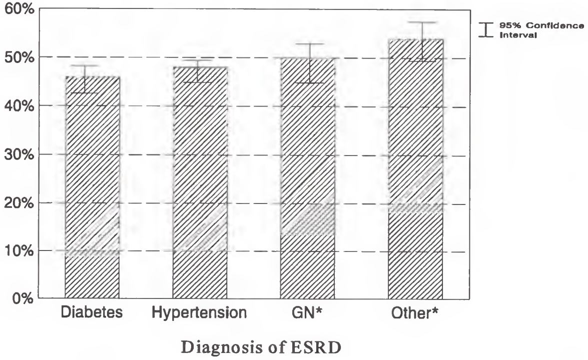


Figure 8: Percent of adult (aged ≥18 years), in-center hemodialysis patients receiving dialysis with a mean URR ≥0.65, October-December 1994, by diagnosis, ESRD Core Indicators Project



*GN = glomerulonephritis; other = see ref. 10

TABLE 4: Percent of adult (aged ≥18 years), in-center hemodialysis patients receiving dialysis with a mean URR ≥0.65 in October-December 1994, by patient characteristics and Network, ESRD Core Indicators Project

PATIENT CHARACTERISTIC	NETWORK																	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
ALL	62	43	33	46	42	49	56	46	54	42	46	61	34	57	59	62	47	51
RACE																		
Black	54	35	26	38	42	47	50	44	53	31	41	55	29	55	32	59	33	45
White	64	51	37	50	40	56	59	50	55	51	50	60	40	57	59	61	52	49
MEN																		
Black	44	22	23	22	29	33	39	29	46	20	27	47	16	47	24	37	28	31
White	55	34	27	43	29	42	56	33	44	43	44	53	26	48	46	51	48	33
WOMEN																		
Black	60	48	29	55	55	58	59	57	60	48	57	64	43	63	43	92	38	59
White	73	72	49	59	53	69	64	67	69	61	60	68	56	67	76	72	56	65

Figure 9: Percent of adult (aged ≥18 years), in-center hemodialysis patients receiving dialysis with a mean URR ≥0.65, October-December 1994, by Network, ESRD Core Indicators Project

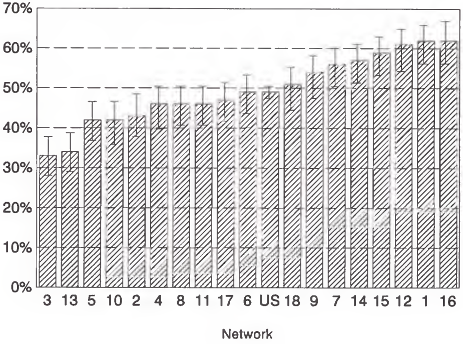


Figure 10: Percent of adult (aged ≥18 years), in-center hemodialysis patients receiving dialysis with a mean URR ≥0.65, October-December 1994, by Network, ESRD Core Indicators Project

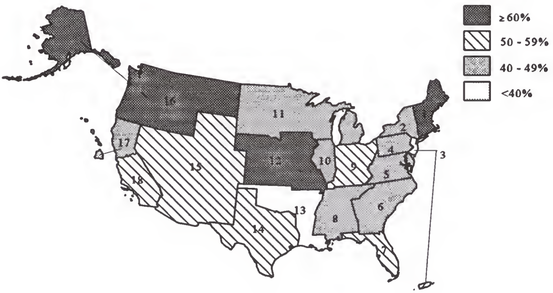
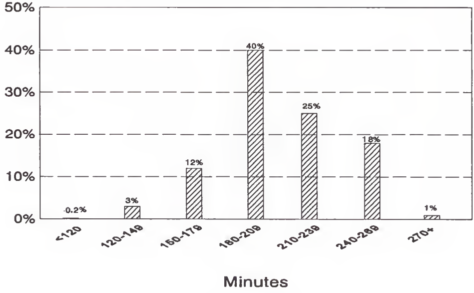


TABLE 5: Time on dialysis for adult (aged ≥18 years), in-center hemodialysis patients in the U.S., October-December 1994, by patient characteristics, 1994 Core Indicators Project

PATIENT CHARACTERISTIC	Mean time on dialysis (minutes)	Mean time per dialysis session (minutes)		
		URR <0.6	URR 0.60-0.64	URR ≥0.65
TOTAL	200	196	201	201
GENDER				
Men	206	200	207	210
Women	193	188	192	195
RACE				
AI/AN	195	207	197	191
Asian	185	188	182	185
Black	203	200	203	205
White	198	191	200	200
Other/Unknown	202	205	195	204
AGE GROUP (years)				
18-44	204	202	205	205
45-64	203	200	205	203
65+	195	187	195	198
DIAGNOSIS				
Diabetes mellitus	202	198	202	204
Hypertension	198	194	198	201
Glomerulonephritis	201	199	205	200
Other	195	193	200	194
Unknown	204	205	201	206

Figure 11: Distribution of time on dialysis (minutes) for adult (aged ≥18 years), in-center hemodialysis patients in the U.S., October-December 1994, ESRD Core Indicators Project

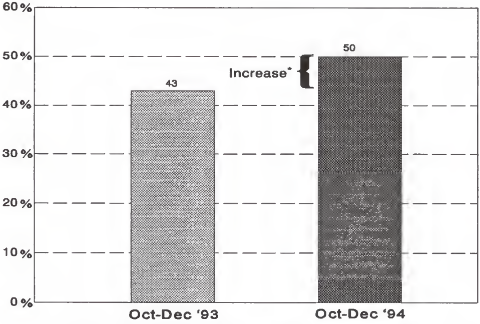


2. October-December 1994 vs October-December 1993, 16 Network areas

In the 16 Networks that provided data for the last quarter of both 1993 and 1994 the average URR increased from 0.627 to 0.640, and the proportion of patients receiving dialysis with a URR ≥0.65 increased significantly from 43% to 50% (Figure 12). This significant improvement occurred for both white and black patients (Figure 13). Nationally, this improvement means that more than 10,000 patients were receiving hemodialysis with a URR ≥0.65 in late 1994 who would not have received this level of dialysis had they been dialyzing one year earlier (Figure 3).

From late 1993 to late 1994 there was an increase in the proportion of patients receiving dialysis with a URR ≥0.65 in each of the 16 network areas (Figure 14), and in seven of the areas the increase was statistically significant (Figure 15).

Figure 12: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean URR ≥0.65, October-December 1994 compared to October-December 1993, ESRD Core Indicators Project



*7 percentage point increase from '93 to '94;rate ratio: 1.3 (95% CI 1.2, 1.4)

Figure 13: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean URR≥0.65, October-December 1994 compared to October-December 1993, by race, ESRD Core Indicators Project

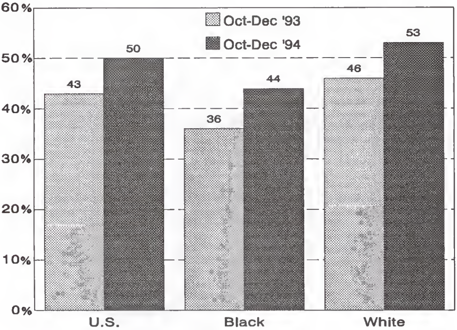


Figure 14: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean URR ≥0.65, October-December 1994 compared with October-December 1993, by Network, ESRD Core Indicators Project

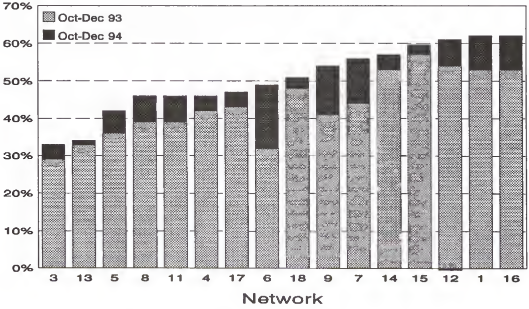
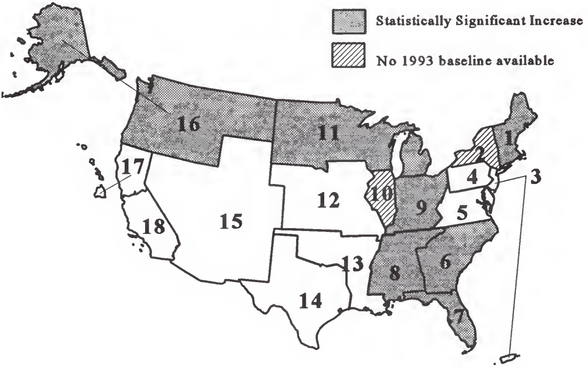


Figure 15: ESRD Network areas with statistically significant improvement in percent of adult (aged ≥18 years), in-center hemodialysis patients with mean URR ≥0.65, October-December 1994 compared with October-December 1993, ESRD Core Indicators Project


Statistically Significant Increase
No 1993 baseline available
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VI. HEMATOCRIT

1. October-December 1994, all 18 Network areas

The mean hematocrit for adult, in-center hemodialysis patients in the U.S. in the last quarter of 1994 was 31%. The distribution of hematocrit values for black and white patients is shown on Figure 16. The mean hematocrit values for gender, race, age, and diagnosis are shown on Table 6.

The percent of patients with severe anemia (hematocrit <25%) was 6%. The prevalence of severe anemia was higher in patients 18-44 years of age compared to older patients and, as reported previously (12), higher in blacks than whites (FIGURE 17).

While the mean hematocrit varied very little from one geographic area to another (range, 30.4 to 32.3%), the percent of patients with severe anemia varied markedly. Table 7 shows the percent of patients with severe anemia by race and age group in each Network; the percent of all patients with severe anemia ranged from 1% to 9% (FIGURES 18,19).

Because patients could receive rHuEPO during one project month but not during another we were not able to correlate rHuEPO use with the mean hematocrit values. Instead, we assessed rHuEPO use at the time of each of the 19,636 hematocrit determinations reported in this project. Overall, rHuEPO was being used 89% of the time when a hematocrit value was determined. (TABLE 8) Recombinant human erythropoietin was being used 94% of the time when the hematocrit values ranged from 25.0-30.9% and 92% of the time when the hematocrit values ranged from 31.0-35.9% and 89% of the time when the hematocrit values were <25.0% and 70% of the time when the hematocrit values were ≥36.0%. The use of rHuEPO and the average dose (units per kg) at the time of hematocrit determinations for gender, race, age, and diagonosis groups are also shown on Table 8.

Figure 16: Hematocrit values for adult (age ≥18 years), in-center hemodialysis patients in the U.S., October-December 1994, ESRD Core Indicators Project

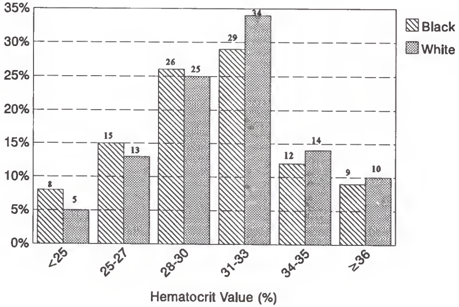


TABLE 6: Hematocrit values for adult (aged ≥ 18 years), in-center hemodialysis patients in the U.S., October-December 1994, by patient characteristics, ESRD Core Indicators Project

	Hematocrit	% of patients with hematocrit					
PATIENT CHARACTERISTIC	mean	<25%	25-27%	28-30%	31-33%	34-35%	≥36%
TOTAL	31	6	14	25	32	13	10
GENDER							
Men	32	6	13	25	31	14	12
Women	31	7	15	25	33	12	7
RACE							
AI/AN	32	5	13	19	35	13	16
Asian	31	7	12	26	34	16	5
Black	31	8	15	26	29	12	9
White	31	5	13	25	34	14	10
Other/Unknown	32	5	14	20	38	11	11
AGE GROUP (years)							
18-44	31	11	16	24	26	13	11
45-64	31	6	15	25	31	13	10
65+	31	4	13	25	36	14	9
DIAGNOSIS							
Diabetes mellitus	31	5	14	27	33	13	8
Hypertension	31	6	14	24	32	14	10
Glomerulonephritis	31	8	12	25	31	14	10
Other	31	7	14	23	33	12	11
Unknown	32	7	13	23	29	15	14

*note: percents may not add up to 100% due to rounding

Figure 17: Percent of adult (aged ≥ 18 years), in-center hemodialysis patients with severe anemia (hematocrit <25%), October-December 1994, by age and race, ESRD Core Indicators Project

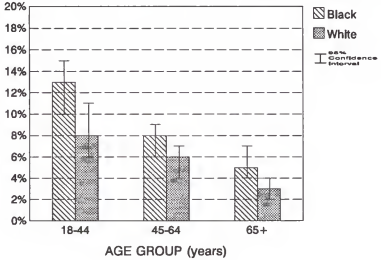


TABLE 7: Percent of adult (aged ≥18 years), in-center hemodialysis patients with severe anemia (hematocrit <25%), October-December 1994, by patient characteristics and Network, ESRD Core Indicators Project

PATIENT CHARACTERISTIC	NETWORK																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
ALL	4	7	9	6	7	9	5	9	6	7	4	1	5	6	5	2	8	4
RACE																		
Black	3	9	10	8	9	10	6	8	7	8	7	2	4	10	3	0	9	6
White	4	6	10	4	4	6	4	11	5	7	2	1	5	3	6	3	9	3
AGE GROUP (years)																		
18-44																		
Black	6	14	20	15	12	11	6	14	14	17	11	0	9	18	13	0	23	7
White	9	16	10	11	10	11	11	13	6	5	0	0	6	4	10	11	14	4
45-64																		
Black	0	10	8	8	12	10	6	6	8	8	8	0	2	6	0	0	9	8
White	7	6	13	5	6	3	7	13	3	9	4	1	6	3	4	2	14	4
65+																		
Black	4	4	5	4	5	10	7	7	3	3	2	5	2	7	0	0	3	4
White	2	2	8	2	0	6	1	8	6	6	2	2	4	4	5	0	4	2

Figure 18: Percent of adult (aged ≥ 18 years), in-center hemodialysis patients with severe anemia (hematocrit <25%), October-December 1994, by Network, ESRD Core Indicators Project

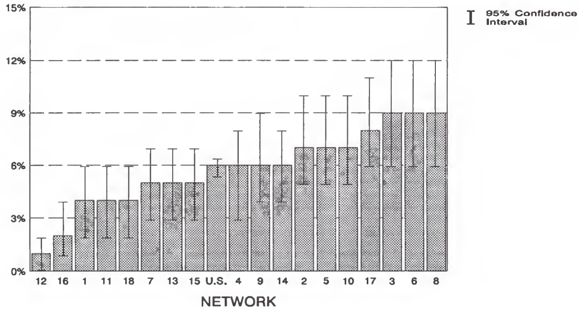


Figure 19: Percent of adult (aged ≥ 18 years), in-center hemodialysis patients with severe anemia (hematocrit <25%), October-December 1994, by Network, ESRD Core Indicators Project

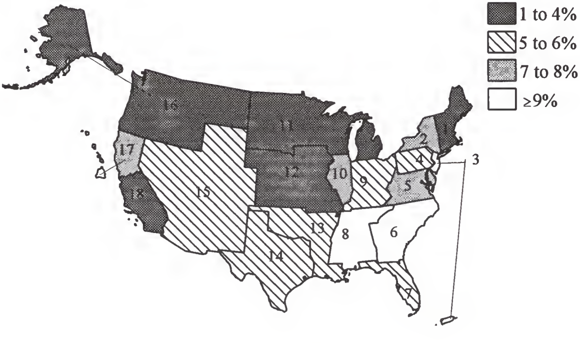


TABLE 8: The percent of adult (aged ≥18 years), in-center hemodialysis patients in the U.S. receiving rHuEPO at time hematocrit was drawn and the average rHuEPO dose, October-December 1994, by patient characteristics, ESRD Core Indicators Project

	Patients(and dose* of rHuEPO)				
		Hematocrit values			
PATIENT CHARACTERISTIC	Overall %	<25% (dose)	25-30% (dose)	31-35% (dose)	≥36% (dose)
TOTAL	88 (58)	89 (71)	94 (59)	92 (55)	70 (60)
GENDER					
Men	87 (54)	89 (66)	93 (56)	90 (51)	64 (56)
Women	91 (52)	88 (75)	95 (62)	93 (58)	79 (64)
RACE					
AI/AN	88 (57)	79 (81)	98 (64)	92 (50)	66 (51)
Asian	93 (69)	88 (77)	96 (72)	93 (64)	83 (77)
Black	88 (56)	86 (69)	93 (57)	91 (52)	65 (57)
White	90 (59)	91 (73)	94 (60)	92 (56)	73 (61)
Other/Unknown	91 (51)	95 (60)	94 (55)	93 (58)	77 (75)
AGE GROUP (years)					
18-44	87 (63)	88 (77)	92 (64)	89 (58)	66 (61)
45-64	88 (57)	87 (69)	95 (57)	91 (53)	65 (61)
65+	91 (57)	91 (68)	94 (58)	93 (55)	76 (59)
DIAGNOSIS					
Diabetes mellitus	91 (55)	89 (77)	95 (54)	92 (53)	74 (62)
Hypertension	89 (58)	89 (65)	93 (60)	91 (56)	75 (58)
Glomerulonephritis	89 (62)	86 (78)	94 (64)	92 (58)	70 (63)
Other	87 (59)	89 (80)	93 (59)	92 (56)	57 (58)
Unknown	86 (64)	92 (90)	95 (74)	89 (52)	58 (58)

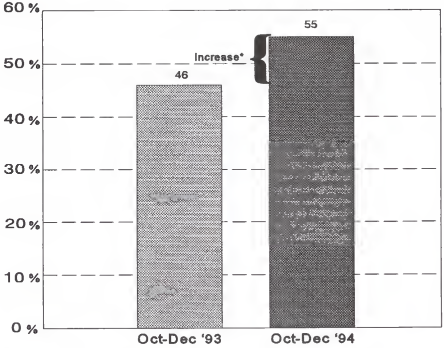
*dose=units per Kg

2. October-December 1994 vs October-December 1993, 16 Network areas

In the 16 Networks that provided data for the last quarter of both 1993 and 1994 the average hematocrit increased from 30.8% to 31.3%; and the proportion of patients with a mean hematocrit >30% increased significantly from 46% to 55% (Figure 20). This significant improvement occurred towards a goal of the Natioanl Coperative Amemia Project for both white and black patients (Figure 21).

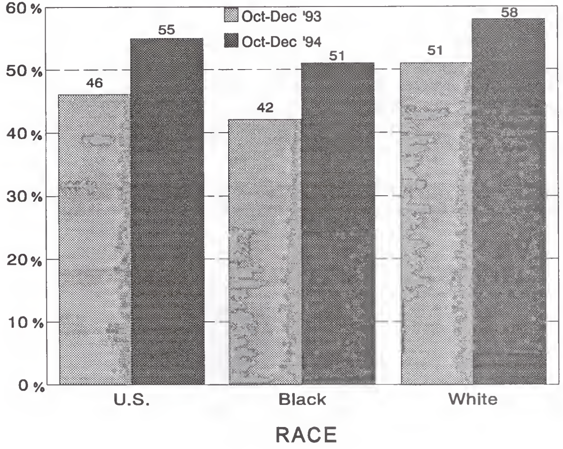
In contrast to this marked improvement in the proportion of patients with hematocrit >30%, there was little change in the proportion of patients with severe anemia (hematocrit <25%). In October-December 1993 10% of black patients and 6% of white patients had severe anemia, while in October-December 1994 8% of black patients and 5% of white patients had severe anemia.

Figure 20: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean hematocrit >30%, October-December 1994 compared to October-December 1993, ESRD Core Indicators Project



*9 percentage point increase from 1993 to 1994; rate ratio 1.4 (95% CI 1.3, 1.6)

Figure 21: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean hematocrit >30%, October-December 1994 compared to October-December 1993, by race, ESRD Core Indicators Project



VII. NUTRITIONAL STATUS

1. October-December 1994, all 18 Network areas

The two commonly used laboratory methods for determining serum albumin levels, bromcresol green (BCG) and bromcresol purple (BCP), have been reported to yield systematically different results. (7) Therefore, we assessed the serum albumin values reported for these two methods separately. As expected, the values determined by the BCP method were systematically lower than those determined by the BCG method (TABLE 9).

The mean serum albumin value for patients whose value was determined by the BCG method (N=5,639) was 3.7 gm/dL, and by the BCP method (N=1,157) was 3.6 gm/dL. (TABLE 9) (Only 4 patients had serum albumin values determined by both BCG and BCP methods during the project months. The values for these patients were excluded from these analyses.) The mean serum albumin values for gender, race, age, and underlying etiology groups are shown on Table 9.

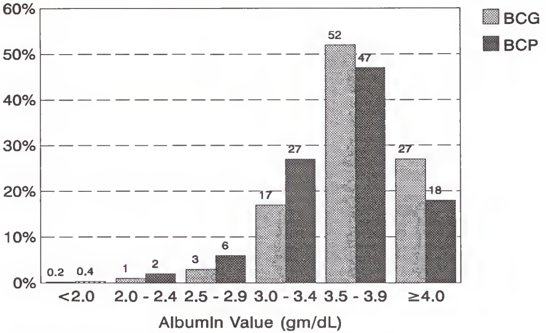
Serum albumin values <3.5 gm/dL by the BCG method were defined as an indicator of inadequate nutritional status. (13) Since the percent of serum albumin values <3.2 gm/dL by the BCP method (18%) was approximately the same as the percent of serum albumin values <3.5 gm/dL by the BCG method (21%), we also defined a BCP result <3.2 gm/dL as an indicator of inadequate nutritional status.

Table 9 also shows the percent of patients by gender, race, age, and underlying etiology groups with mean serum albumin values ≥3.5 gm/dL by the BCG method or ≥3.2 gm/dL by the BCP method. The percent of patients with mean serum albumin values ≥3.5 gm/dL by the BCG or ≥3.2 gm/dL by the BCP method tended to be higher for blacks than for whites, and for men than for women. (FIGURE 23) The percent of patients in each Network area with mean serum albumin values ≥3.5 gm/dL by BCG or ≥3.2 gm/dL by BCP methods is shown on Table 10; the percent ranged from 71% to 83% (FIGURE 24).

2. October-December 1994 vs October-December 1993, 16 Network areas

There was no clinically important change or improvement in the proportion of adult, in-center hemodialysis patients with inadequate nutritional status from October-December 1993 to October-December 1994.

Figure 22: Distribution of serum albumin values for adult (aged ≥18 years), in-center hemodialysis patients, October-December 1994, by laboratory method*, ESRD Core Indicators Project



*laboratory method: BCG = bromcresol green; BCP = bromcresol purple

Figure 23: Percent of adult (aged ≥18 years), in-center hemodialysis patients with mean serum albumin ≥3.5 (BCG method) or ≥3.2 (BCP method) gm/dL, October-December 1994, by race and gender, ESRD Core Indicators Project

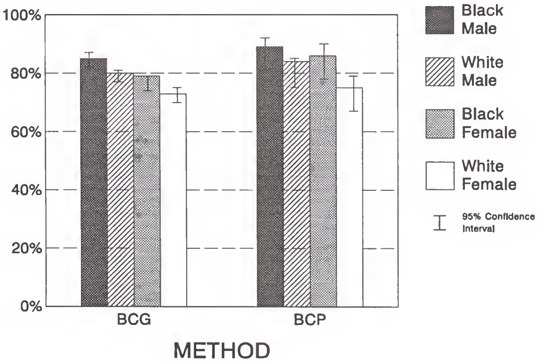


TABLE 9: Serum albumin values (gm/dL) for adult (aged ≥ 18 years), in-center hemodialysis patients in the U.S., October-December 1994, by patient characteristics and by laboratory method*, ESRD Core Indicators Project

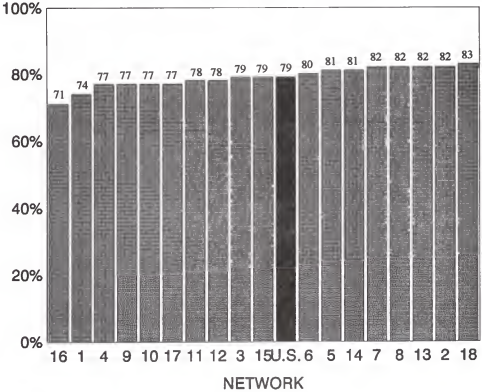
	BCG		BCP	
PATIENT CHARACTERISTIC	mean	%≥3.5	mean	% >3.2
TOTAL	3.7	79	3.6	82
GENDER				
Men	3.8	82	3.6	85
Women	3.7	76	3.6	79
RACE				
AI/AN	3.7	72	3.6	77
Asian	3.8	82	3.4	75
Black	3.8	82	3.7	88
White	3.7	77	3.6	80
Other/Unknown	3.8	79	3.5	65
AGE GROUP (years)				
18-44	3.8	84	3.8	85
45-64	3.8	81	3.6	83
65+	3.7	75	3.5	80
DIAGNOSIS				
Diabetes mellitus	3.7	75	3.5	75
Hypertension	3.8	82	3.7	86
Glomerulonephritis	3.8	83	.3.7	87
Other	3.8	80	3.6	85
Unknown	3.7	77	3.7	79

*laboratory methods: BCG = bromcresol green; BCP = bromcresol purple

TABLE 10: Percent of adult (aged ≥ 18 years), in-center hemodialysis patients with serum albumin ≥3.5 (BCG method) or >3.2 (BCP method), October-December 1994, by patient characteristics and Network, ESRD Core Indicators Project

	NETWORK																	
PATIENT CHARACTERISTIC	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
ALL	74	82	79	77	81	80	82	82	77	77	78	78	82	81	79	71	77	83
RACE																		
Black	77	84	83	81	82	80	85	86	82	84	88	83	85	80	68	74	88	88
White	74	81	78	75	80	82	81	76	74	71	74	76	79	82	79	71	73	80
AGE GROUP (years)																		
18-44																		
Black	69	86	56	81	85	83	87	90	87	90	94	85	88	82	100	75	92	100
White	83	94	88	78	86	72	83	80	82	57	76	79	79	83	84	96	80	89
45-64																		
Black	86	86	91	83	83	81	88	86	78	87	90	91	90	83	64	80	94	80
White	89	85	78	70	74	86	78	74	75	80	72	74	83	82	86	67	73	85
65+																		
Black	73	79	96	78	79	76	80	83	82	78	82	74	78	74	44	63	79	85
White	75	72	74	76	83	83	82	75	71	71	75	77	76	81	72	64	70	73

Figure 24: Distribution of serum albumin values for adult (aged ≥18 years), in-center hemodialysis patients, October-December 1994, by Network, ESRD Core Indicators Project



VIII. BLOOD PRESSURE CONTROL

1. October-December 1994, all 18 Network areas

The mean pre-dialysis systolic and diastolic blood pressure values for adult, in-center hemodialysis patients in the last quarter of 1994 were 151 and 79 mm Hg, respectively (TABLE 11). The distribution of pre-and post-dialysis systolic and diastolic blood pressure values for these patients are shown in Figures 25,26.

The percent of these patients with a mean pre-dialysis systolic blood pressure >150 mm Hg or diastolic blood pressure >90 mm Hg, which may be a measure for inadequately controlled hypertension, is shown on Table 11 for gender, race, age, and diagnosis. The overall prevalence of inadequately controlled hypertension (by the diastolic blood pressure measure) was 15%; this prevalence was higher for men than for women, blacks than for whites, and patients 18-44 years of age than for older patients (TABLE 11).

2. October-December 1994 vs. October-December 1993, 16 Network areas

There was no clinically important change or improvement in the proportion of adult, in-center hemodialysis patients with hypertension from October-December 1993 to October-December 1994.

TABLE 11: Pre-and post-dialysis blood pressure values for adult (aged ≥18 years), in-center hemodialysis patients in the U.S., October-December 1994, by patient characteristics, ESRD Core Indicators Project

PATIENT CHARACTERISTIC	Systolic Blood Pressure (mm Hg)				Diastolic Blood Pressure (mm Hg)			
	Pre-dialysis		Post-dialysis		Pre-dialysis		Post-dialysis	
	mean	%>150	mean	%>150	mean	%>90	mean	%>90
TOTAL	151	51	137	23	79	15	74	6
GENDER								
Men	150	49	136	23	80	18	75	8
Women	152	52	137	24	78	12	73	5
RACE								
AI/AN	152	55	139	26	79	16	74	6
Asian	153	55	138	23	80	14	75	5
Black	152	52	138	26	82	21	76	9
White	150	49	136	22	77	11	72	5
Other	149	45	136	22	78	13	72	3
AGE GROUP (years)								
18-44	150	49	135	24	80	35	79	16
45-64	152	54	137	24	81	18	75	6
65+	150	48	137	23	75	5	71	2
DIAGNOSIS								
Diabetes mellitus	156	57	140	26	79	12	73	4
Hypertension	151	51	138	26	80	17	75	8
Glomerulonephritis	148	45	134	20	80	19	75	8
Other	146	41	132	16	79	15	73	6
Unknown	147	43	134	20	79	17	74	8

Figure 25: Pre- and post-dialysis systolic blood pressure values for adult (aged ≥18 years), in-center hemodialysis patients in the U.S., October-December 1994, ESRD Core Indicators Project

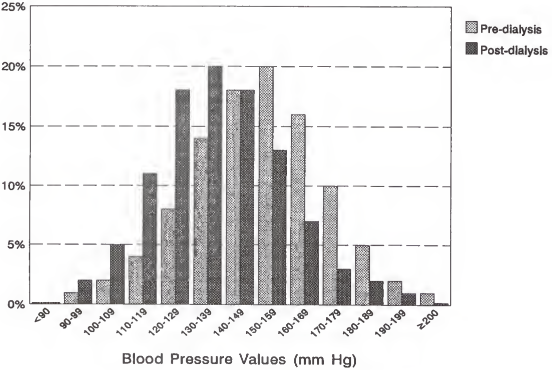
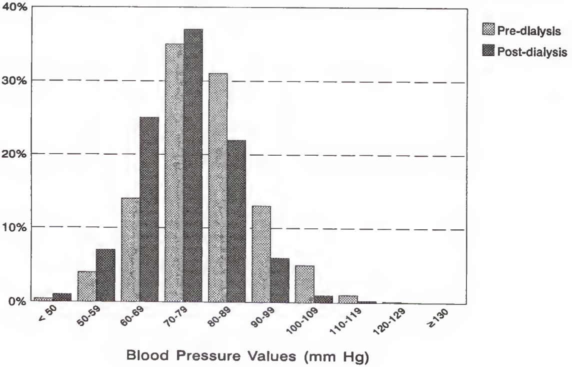


Figure 26: Pre- and post-dialysis diastolic blood pressure values for adult (aged ≥18 years), in-center hemodialysis patients in the U.S., October-December 1994, ESRD Core Indicators Project



IX. ACCURACY OF DATA ABSTRACTION

Accuracy of data abstraction

Each ESRD Network reabstracted data from a minimum of 5 percent of the medical records previously abstracted by ESRD facility staff in the Network's area (these records were from at least five facilities in each Network). These reabstractions were conducted onsite at ESRD facilities, or in some cases by requesting photocopies of the specified records. This activity was done during November and December 1995. The reabstracted data were computerized at each Network and forwarded to HCFA, where the analysis was conducted.

Three hundred and two records (4.4% of the original 6,919) were reabstracted. These records came from 108 ESRD facilities. Table 12 compares results for selected clinical indicators measures between data abstracted by local ESRD facility staff and data abstracted by ESRD Network staff. Overall, a high degree of agreement existed between the two datasets. A notable exception was found for the average time on dialysis during the dialysis session. Data abstracted by facility staff yielded an average time on dialysis of 205 minutes (range 123-290 minutes), while data abstracted by Network staff yielded an average time on dialysis of 175 minutes (range 48-290 minutes). Additional investigation of this disparate finding is planned.

The clinical characteristics (core indicators) of adult, in-center hemodialysis patients in the 1994 Core Indicators project are essentially the same when data are abstracted by ESRD facility staff as when data are abstracted by ESRD Network staff.

Table 12: Clinical characteristics of adult (aged ≥18 years), in-center hemodialysis patients in October-December 1994, using data abstracted by ESRD facility staff compared to ESRD Network staff (n=302), ESRD Core Indicators Project

CLINICAL INDICATORS & PATIENT CHARACTERISTICS	ABSTRACTED BY FACILITY STAFF	ABSTRACTED BY NETWORK STAFF
Urea Reduction Ratio (URR)		
URR ≥0.65	50% (n=276)	47% (n=264)
Average URR	0.65 (0.3-0.8)	0.64 (0.4-0.8)
Average time per dialysis session (minutes)	(n=222) 205 (123-290)	(n=295) 175 (48-290)
Hematocrit		
Hematocrit <25%	5% (n=302)	3% (n=299)
Average hematocrit	31.8 (11.8-45.1)	31.8 (11.8-44.7)
Serum Albumin		
<3.5 gm/dL (BCG)	19% (n=251)	18% (n=266)
Average albumin (BCG)	3.8 (2.2-4.7)	3.8 (2.2-4.9)
<3.2 gm/dL (BCP)	7% (n=43)	13% (n=31)
Average albumin (BCP)	3.7 (2.2-4.3)	3.5 (2.2-4.2)
Low albumin (<3.5 gm/dL (BCG) or <3.2 gm/dL (BCP))	17% (n=294)	18% (n=298)
Pre-dialysis systolic blood pressure		
>150 mmHg	55% (n=301)	55% (n=293)
Average pre-dialysis systolic	152 (90-203)	152 (96-209)
Pre-dialysis diastolic blood pressure		
>90 mmHg	16% (n=301)	18% (n=293)
Average pre-dialysis diastolic	79 (49-120)	80 (49-118)
Diagnosis	(n=302)	(n=302)
Diabetes mellitus	33%	34%
Hypertension	32%	32%
Glomerulonephritis	15%	16%
Other/Unknown	20%	19%

X. IMPORTANT NOTE

The data in this report are intended to stimulate the development of quality improvement projects in dialysis facilities. The data collected for this project were necessarily limited; not all dialytic parameters that influence patient care for these clinical measures were collected. In addition, the project did not attempt to develop facility specific profiles of care. To do this would have required an enormous increase in sample size and resources to support the project.

During 1996 we plan to provide a series of supplemental reports. In these reports we will give more detailed analysis using data collected for the ESRD Core Indicators Project as well as other data from which we can derive information about the patients in the sample identified for this project. We welcome suggestions for topics to explore in these supplemental reports.

As you review these data, we hope you will ask yourself questions about how your patients' clinical characteristics compare to these national and Network profiles. Additional information must be collected at your facility if you wish to answer these questions and develop ways to improve patient care for your patients. Your ESRD Network staff and Medical Review Board are available to assist you in using these data in your quality improvement activities and in developing facility specific quality improvement projects.

XI. REFERENCES

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XII. HCFA OFFICES AND ESRD NETWORKS

This report was prepared by the Health Care Financing Administration's Regional Office in Seattle (Region X) and the Office of Quality Improvement Programs, in Baltimore. Questions about the contents, or requests for additional copies, can be directed to any of the following HCFA offices or ESRD Networks.

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Health Care Financing Administration - Region I
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Medical Review Branch
Room 2275
JFK Federal Building
Boston, MA 02203-0003
(617) 565-3136

Health Care Financing Administration - Region VII
Division of Health Standards and Quality,
Medical Review Branch
New Federal Office Building
601 East 12th Street, Room 242
Kansas City, MO 64106-2808
(816) 426-5746

Health Care Financing Administration - Region VI
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Medical Review Branch
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ESRD Network Organization No. 7
ESRD Network of Florida, Inc.
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Tampa, FL 33606
(813) 251-8686

ESRD Network Organization No. 8
Network Eight, Inc.
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Jackson, MS 39296-5868
(601) 936-9260

ESRD Network Organization No. 9
Tri-State Renal Network, Inc.
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ESRD Network Organization No. 10
Crescent Counties Foundation for Medical Care
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Lisle, IL 60532
(708) 769-9600

ESRD Network Organization No. 11
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ESRD Network Organization No. 13
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ESRD Network of Texas, Inc.
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Richardson, TX 75080
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6255 Sunset Boulevard, Suite 2211
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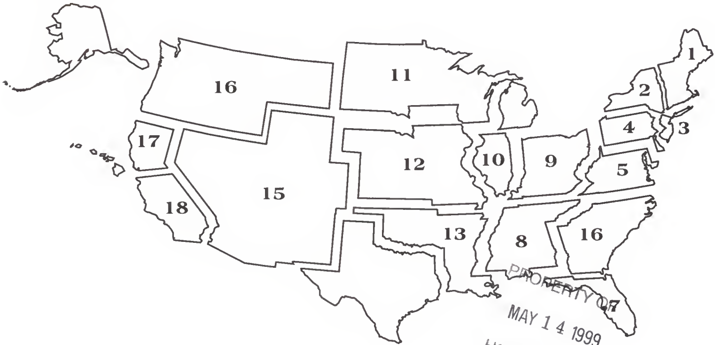

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